PATENT SPECIFICATION

1,064,031

1,064,031

Date of Application and filing Complete Specification: March 12, 1964. No. 10520/64

Application made in Italy (No. 4809) on March 12, 1963.

Complete Specification Published: April 5, 1967.

Index at Acceptance:—B8 C (3C7, 5A, 10B1DJ4G, 10T2, 10U, 10V, 12A, 24B1, 24C, 27, X6); 10J3, 10J4B, 10J4F, 10J4G, 10T2, 10U, 10V, 12A, 24B1, 24C, 27, X6). D1 C24.

Int. Cl.:—B 65 b.

COMPLETE SPECIFICATION

DRAWINGS ATTACHED

A Machine for the Application of Ornamental Wrappings to Products having a Circular Cross-section

We, ANTONIO DOMINICI and RINO DOMINICI, both Italian citizens, trading in co-partnership as COSTRUZIONI MECCHANICHE ANTONIO DOMINICI & F.LLI, of 8, Via R. D'Andreotto, Perugia, Italy, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention refers to a machine for the application of ornamental wrappings to chocolate and other confectionary products having a circular cross-section, which performs the three consecutive operations of smoothing a tin foil wrapping already applied to the product, wrapping the product in a foil of transparent material, and tying, around a tuft formed on said foil, a ribbon, tape or string. In the ornamental wrapping of confectionary products having a round shape, and particularly in the wrapping of chocolate eggs, there arise various problems. The first is that of obtaining, directly on the chocolate egg, a tin foil wrapping which is perfectly smooth. In fact, in the operation of wrapping a tin foil around a chocolate egg, either manually or by machine, the tin foil does not exactly follow the convexity of the egg, with the consequence that this first coat is not smooth, but covered with strongly projecting folds. This renders necessary a second operation, which consists in the smoothing down of this first coat of tin foil. There exist various machines for this smoothing operation. In such machines, a resilient belt is led over the chocolate eggs in order to impart to them a rolling motion and thus smooth down the folds in the tin foil wrapping. However, such machines are only applicable to chocolate eggs of small dimensions, in which the thickness of the walls is not too small in comparison to the size of the eggs. For eggs of larger dimensions, with comparatively very thin walls, such machines require an exceedingly large toll of breakages, and therefore, even in mass production, larger eggs were smoothed by hand.

Similarly, the second wrapping, consisting in a foil of transparent material, was applied by hand, and this second wrapping was tied, also by hand, with a ribbon, tape or string. Therefore, the cost of labor required to perform these three operations weighed heavily on the price of the finished eggs. It is one object of the present invention to eliminate this drawback by supplying a machine which is capable of performing the three above discussed operations, for eggs of any size.

It is a further object of the present invention to supply a machine which performs the three aforesaid operations in a perfectly automatic manner in three operating stages.

It is a still further object of the present invention to supply a machine of the above specified type in which the three stations are interconnected by timing and transfer devices such as to eliminate any manual handling of the chocolate eggs between successive operating stages.

The machine of the invention consists in a frame carrying the stations for smoothing on the chocolate egg the tin foil already applied to it roughly, for wrapping around the smoothed tin foil a foil of transparent material and forming the latter into a tuft around one end of the egg, and tying at the base of this tuft a ribbon, string or tape so as to form a bow of pleasant aspect.

These and other objects and advantages of the present machine will be better understood from the following description of one embodiment thereof, made with reference

[Price 4s. 6d.]

to the accompanying drawings, in which:

Figure 1 is a schematic front elevation of the machine, showing the smoothing, wrapping and tying stations, together with their drive and transfer mechanisms;

Figure 2 is a schematic side elevation of the machine shown in Figure 1;

Figure 3 is a partial lateral view of the smoothing station of the machine, taken along line 1-1 of Figure 4;

Figure 4 is a partly sectional front view of the same station, taken along line 11-11 of Figure 3;

Figure 5 is a partial front view, taken along line V-V of Figure 6, of the station performing the second wrapping;

Figure 6 is a lateral view of the same station, taken along line V1-V1 of Figure 5;

Figure 7 shows the station of Figure 5, in a second step of the wrapping operation indicated in Figure 5;

Figure 8 is a sectional view taken along line V111-V111 of Figure 7;

Figures 9 and 10 are views corresponding to Figures 5 and 7, but showing successive stages of operation;

Figure 11 is a detail view, on an enlarged scale, of the section shown in Figure 8;

Figure 12 is a schematic elevational view of the tying station seen from the rear of the machine;

Figure 13 is a lateral elevational view of the station shown in Figure 12, as seen from the left of this Figure;

Figures 14, 15, 16 and 17 are schematic top views showing four successive tying steps of the station shown in Figures 11-13;

Figure 18 is a partial elevation of the tying station, shown in the position of Figure 17;

Figures 19, 20 and 21 are elevational views of the same station, in three successive operating positions; and

Figure 22 shows a completely wrapped and tied chocolate egg.

As shown in Figs. 1 and 2, the wrapping machine consists of a frame, generally indicated at 1 carrying the three stations as well as the transfer and timing mechanisms. The chocolate egg, which is already coarsely enveloped in a tin foil, is first put on a crib 32 and thence transferred, by a mechanism to be described later, to the smoothing station, shown in greater detail in Figures 3 and 4. A motor unit, not shown, rotates shafts 3 and 4 in the direction indicated by arrows F_1. On these two parallel shafts are keyed rolls 5 and 6 respectively.

These rolls present a concave ovoidal profile exactly matching the contour of a chocolate egg 7. Therefore the egg is uniformly supported along its contour and the rotation of the rolls impresses upon it a rotation in a sense contrary to that of the rolls (arrow F_2). Rolls 5 and 6 are coated with a layer 8 of rubber or similar yielding material; each roll comprises a central portion 9 keyed to the respective shaft, and two external portions 10 and 11 which are mounted loosely on the same shaft. This measure serves to reduce the difference between the peripheral speed of the central portion 9 and the external portions 10 and 11, which are in contact with the egg 7, and to eliminate thereby excessive friction between these external portions and the tin foil covering the egg.

Perpendicularly above the gap between rolls 5 and 6 is mounted the smoothing device proper, generally indicated at 12. It comprises two arcuate parallel arms 13 rigidly interconnected by means of two support plates 14 and 15; the whole device 12 is movable in a vertical direction, as indicated by the arrows F_3 and is actuated according to a predetermined rhythm by means of a vertical drive bar 16 attached to the support plate 15. Between the two arms 13 there is mounted a support 18 having a semicircular section, and whose curvature matches the contour of the egg 7; support 18 presents at one end a small block 19 held to the support plate 14 by means of a spring 20 and guided vertically within a groove 21; at its other end support 18 carries a perforated plate 22 which is vertically guided by a pin 23 fixed to support plate 15, and is urged downward by a helical spring 24 fixed to the head 25 of pin 23. Support 18 is surrounded almost along its entire length by a helical spring of a narrow pitch and a diameter larger than the external diameter of support 18, so as to have a considerable clearance with respect to it; spring 26 can thus freely rotate around support 18.

A second helical spring 27, of a smaller diameter, is mounted within support 18 and its two ends are attached to the ends of support 18 with spring 27 under tension, so that this internal spring 27 bearing upon the spring 26 constantly and yieldingly urges spring 26 downward, as indicated in Fig. 4. Now, if the whole smoothing device 12 is lowered upon the egg 7 while the latter is being revolved by rolls 5 and 6, the lower contour of spring 26 will be pressed yieldingly upon the tin foil enveloping the egg and smooth it perfectly; the spring 26 will be free to rotate and rise elastically when it meets an asperity so that even the tin foil wrappings of eggs which are irregular or present stepped junction lines will be perfectly smoothed down, without breaking the eggs. Also the springs 20 and 24 at both ends of support 18 contribute towards rendering the smoothing action more gentle.

In order to smooth the tin foil also correspondingly to the summits of the eggs, the support plates 14 and 15 present concave internal surfaces 28 and 29 respectively, and preferably these surfaces are coated with yielding material.

Obviously, in the case of large-sized eggs or of products having a different contour, more than one smoothing device 12 may be provided.

The number of revolutions required for an egg to get its tin foil wrapping perfectly smoothed depends on its size and shape.

The smoothness can be controlled by appropriate means and once the required degree of smoothness has been attained, the egg may be transfered to the successive station by the transfer means shown schematically in Figures 1 and 2. This consists in a rod 31, guided by a system of levers. Its two ends are bent upward and terminate in two cribs 32 which, as already mentioned, support the egg 7 during its transfer to and from the smoothing station. Rod 31 is actuated in a rhythmic horizontal reciprocating motion, as indicated by arrow F_4, and in a similar vertical motion, according to arrows F_5; the horizontal reciprocating motion can be carried out through a lever 35 fulcrumed at 36 and controlled by cam 37 driven by a shaft 38; the vertical reciprocating motion is carried out by means of a lever 39 which is fulcrumed at 40 and controlled by a cam 41 mounted upon the same shaft 38. Lever 39 actuates a connecting rod 42 which is movable in a vertical direction. In this manner an egg 7*a* wrapped in tin foil and put, either manually or mechanically upon crib 32, is lifted, carried forward and placed upon rolls 5 and 6 to be smoothed by the device 12, while an egg 7, which has already been subjected to the smoothing operation, is lifted and transferred to a position 7b, to be enveloped in a foil of transparent or ornamental material, as will be described in the following.

The ornamental foil, indicated at 45, is fed from a roll 44 which is rotatably supported on brackets 43; it is passed over a roll 46 and is gripped between two drive rolls 48 which are intermittently actuated by gears 49 which are driven, over a chain and sprocket transmission 50 and 51 respectively, by a motor (not represented); rolls 48 drop the foil 45 along the front face of a plate 52 which will be described in greater detail in the following. Reference number 53 indicates a section of the foil 45, having a generally square format, cut from the roll 44 by means of a cutting device which consists essentially of a slider 54 fitted with a blade and reciprocated at timed intervals along a guide bar 55 horizontally disposed on frame 1.

Frame 1 is fitted with a support 56 upon which is mounted a holding device for the foil section 53. The holding device 57 consists in four arms 58 which extend from a cylindrical body 59 and are mutually spaced at right angles from each other. The ends of arms 58 hold resilient pads or brushes 60 arranged in the form of four sections of an annulus (Figure 5). The cylinder 59 can be horizontally displaced along its axis, by convenient mechanical means of any known kind, and therefore not shown, so as to be capable of moving towards or away from plate 52, and by this means the pads 60, after having let pass foil 53, can press the latter against said plate. Plate 52 presents a circular opening 61, around which is mounted, on the front face of the machine, a wetting device consisting in four arcuate sections 81, as shown in Figs. 8 and 11. Each section comprises a metal frame 82 carrying a groove 83 covered by a platelet 84 which is perforated. Over this platelet is fastened a pad 85 of fibre, textile material or the like. Water is fed through ducts 86 to the grooves 83 and thence, through the perforations in the platelet, to the pads 85. The foil section 53 is pressed by the pads 60 against the plate 52 and is wetted along an annular area, which is involved in the successive wrapping operation. The purpose of this wetting is to render the matching of the ornamental foil around the egg more easy and complete and to cause the foil, after it has dried and contracted, to stretch better around the egg. The positioning of the wetting device shown in the Figs. has proved the most functional to attain this purpose.

Water is fed to the pads in a discontinuous manner: it occurs as soon as the section 53 has been cut to size by the slider 54 and has been fixed upon plate 52 by the pads 60. The water may be fed by four independent little pumps, not shown, actuated simultaneously by convenient synchronizing means controlled by the drive organs of the machine, or by any other suitable means, such as a single tank which is pressurized and fitted with a tap actuated by timing means controlled by the movement of cylinder 59.

The egg may be transferred from position 7*b* to position 7*c* through the opening 61 (Fig. 6) by means of a push rod 62 which is reciprocable by mechanical means within the cylinder 59. Before an egg is carried by crib 33 into position 7*b*, a lever mechanism 63, equipped with suction cups extracts from a container 65 a conventional base 66 for the eggs and applies it, with an arcuate movement according to arrow F_6, upon sheet 53, in front of opening 61. If now an egg, which has been transferred into position 7*b*, is being pushed by rod 62,

its thicker summit is pressed against base 66 and drawn back axially through opening 61, and by this movement it also entrains sheet 53 so that the latter is applied against this base; therefore sheet 53 is pulled partly out from below pads 60 but is still yieldably held back by them.

In the case of eggs having frail walls the thrust of the push rod 62 could produce their breakage. To prevent this the thrust of push rod 62 is reduced by a retreating action exerted on base 66 by means of a pneumatic suction device comprising a cylinder 90 (Fig. 2), which is movable within a plane perpendicular to the plane of the drawing (in order to permit finally a further drawing back of the egg); within said cylinder is reciprocable a piston 91 whose stem 92 carries a suction cap 93 capable of receiving base 66. The internal surface of this suction cap is perforated and communicates with a chamber located within the cap, and this chamber communicates through a longitudinal duct in the stem 92 and a corresponding hole of the piston 91, with the cylinder chamber 94 and thence through a further duct 95 with a vacuum pump of known type and therefore not represented. In this manner the vacuum created by the pump will suck against the internal surface of cap 93 the sheet covering the base 66 and will thus draw back the egg while the push rod 62 will exert its forward thrust. At the end of this stroke and after the egg has been transferred, the cap 93 will be returned to its initial position by connecting the duct 96 to the vacuum pump and disconnecting duct 95. In lieu of the suction device just described a non-perforated cap and a compressor may be applied in case of eggs of sturdier construction, and in this latter case the device would merely act as a guide for the egg while it is being pushed forward by rod 62. In this case duct 95 would be opened when the egg is to be discharged, while the return of piston 91 to its starting position would be brought about by feeding compressed air through duct 95.

In order to permit a regular and uniform formation of the ornamental foil wrapping and tuft 67 on the egg, the plate 52, which is represented with a circular shape in Figs. 5-10, is fitted with an arrangement of push pins which fold and close the foil 53 upon the free end of the egg so as to form a tuft and to permit the successive tying of the wrapping. The push pin arrangement comprises a number of pins 68, for instance twenty-four as illustrated, which are disposed so as to be radially slidable behind the plate 52. Those pins are arranged in groups of three, and precisely three push pins 68a correspondingly to each corner of the square foil 53, and three push pins 68b correspondingly to each of the four sides of foil 53. The central pin of each group 68a contains also an arm 69 fulcrumed correspondingly to the point of said pin. This arm 69 rests, when the pin is in its retracted position, on plate 52 while, when this pin is pushed forward, it rotates to a position which is perpendicular to said plate 52, as shown by the arrows F_7 of Fig. 8. The movement of the eight push pin groups and of the arms 69 is controlled, in synchronism with the other movements of the machine, by cam means (not shown) mounted behind plate 52, which are of any convenient type and therefore not further described.

The operation of wrapping the ornamental foil sheet around the chocolate egg is as follows:

Starting from the position indicated in Figs. 5 and 6, and generally indicated at 7*c*, into which the egg has been pushed by a rod 62, slidable within the cylinder 59, and the suction cap 93 shown in Fig. 2, the push pins 68*a* (Figs. 7 and 8) are moved forward while the egg is still pushed by rod 62 and the suction cap 93 into a more retracted position 7*d*. In this manner the arms 69 lift the corners of sheet 53 from the plate 52, while the sides of the sheet are still held back yieldingly by the pads 60. The corners of the sheet, which are not involved in the wrapping since they will form the points of the tuft, require no wetting and in fact, thanks to the movement of arms 69, they are removed from the wetting device 81. Now also the push pins 68*b* are moved radially inward (Fig. 9) to tighten and close sheet 53 over the summit of the egg and form a tuft atop of the latter. The base of the tuft so formed is now gripped by the scissors 70 of a mechanism 71. At this point the push pins of the groups 68*b* are first retracted (Figure 10), while the push pins of the groups 68*a* remain in place for a short while, and the push rod 62 is retracted. Now the device 71 is drawn back, as indicated by arrow F_8, by a lever 72 fulcrumed in 73 and actuated, by means of an adjustable tie rod 74, by a second lever 75 which is fulcrumed in 76 and controlled by a cam 77 keyed on a shaft 78. Therefore the egg is drawn back from position 7*d*. In this connection it must be noted that the tuft has to pass through the opening 61, to be tied by the mechanical tying station. This station (Fig. 12) essentially comprises five fingers 101, 102, 103, 104 and 105. The lower ends of fingers 101 and 102 are integral with two gears 106 and 107 respectively which are rotatably mounted on stirrups 108 and 109 fixed to a cylindrical sleeve 110, within which is axially reciprocable a cylinder 111 ending in a rack 112. This rack meshes

with both gears 106 and 107. Within cylinder 111 and rack 112 a stem 113 is slidable. The upper end of this stem carries two arms 114 and 115 respectively which extend transversally and whose upper edges 116, 117 present faces slanted in opposite directions. Fingers 101 and 102 carry two levers 118 and 119 respectively which are fulcrumed in 120 and 121 on projections 122 and 123 of said fingers 101 and 102. The upper end of lever 118 presents a serrated projection 124 which is capable of co-acting with a serrated surface 125 of the upper end of finger 101. Finger 102 carries at its upper end a fork 126 ending in two points 127 and 128, while lever 119 is equipped at its upper end with a roll 129 which is freely rotatable around its own axis and fit to pass through a corresponding bore in fork point 127 and to close thereby the gap between points 127 and 128. It is to be noted that the body of finger 102 is straight in its longitudinal sense while the body of finger 101 is bent rectangularly at points 130 and 131, and thus the lower ends of fingers 101 and 102 are positioned at opposite parts with respect to arms 115 and 114. Lever 118 presents rectangular bends correspondingly to the bends of finger 101 and therefore the lower ends of levers 118 and 119 are positioned above the edges 117 and 116 respectively of arms 115 and 114. Between finger 101 and lever 118 and between finger 102 and lever 119 are inserted springs 132 and 133 respectively.

From a spool 134 mounted upon the frame, a ribbon, tape or string 135 is fed. The free end of this ribbon, tape or spring is held by grippers 136 and cut to length by scissors 137, both of which are schematically indicated. The mechanism comprising the fingers 101 and 102 and indicated in its entirety at 138 is shown in the Figs. 1, 2 and 13; fingers 103, 104 and 105 are not mounted on mechanism 138; fingers 103 and 104 are rigid with gears 139 and 140 respectively, which mesh with each other. Finger 105 is fulcrumed in 141. Components 110, 111 and 113 of mechanism 138, and components 139, 140 and 141 are interconnected by suitable drive and timing means, not shown, which are controlled by the machine.

At the start of the tying operation, the device 100 is in the position shown in Fig. 12, in other words, fingers 101 and 102 of the mechanism 138 are in the position sketched in Fig. 14. In the successive step the abovementioned drive and timing means rotate mechanism 138 approximately 20° around its vertical axis and lift it simultaneously until fingers 101 and 102 are brought to the position sketched in Fig. 15 and the ribbon 135 is caught between these fingers. Successively mechanism 138 is rotated back to its original angular position (Fig. 16). At this point cylinder 111 is lifted and by means of the components 112, 106 and 107, fingers 101 and 102 are spread apart to the position of Figs. 17 or 18. Ribbon 135 is retained by serrations on fingers 101 and 102, not shown, and is now in the position preparatory to be knotted into a bow. The ribbon at this stage has an S-shape configuration (as shown in Fig. 17) which will hereinafter be referred to as an open slip-knot. At this instant an egg is transferred by mechanism 71 into the position 7c overlying fingers 101 and 102 (Fig. 2). In the Figs. 18 through 21, for the sake of simplicity, only the base 142 of the tuft is indicated in section. In a successive step of operation of device 100, fingers 103 and 104 come into action. Grippers 136 are opened, and fingers 103 and 104 are rotated around their fulcrums 139 and 140. Thereby they loop the ribbon, over rolls 143 and 144 provided at their respective ends, around tuft 142, to the position shown in Fig. 19. The ribbon entrained by finger 104 will in this manner penetrate into the gap intervening between points 127 and 128 of fork 126, and get caught in the clearance provided between the end of finger 105 and a roll 145 pivoted to said end.

The free end of the ribbon entrained by finger 103 is transferred upon the serrated surface 125 of finger 101. At this point stem 113 is pushed upward and therefore levers 118 and 119 are rotated around their fulcrums 120 and 121 under the action of the slanted edges 117 and 116 of arms 115 and 114 upon the lower ends of these levers. Thus the free end of ribbon 135 is caught between the serrated surface 125 and the serrated projection 124, while the other length of ribbon is slidably entrapped beneath roll 129. Simultaneously roll 145, which is rotatably mounted on the upper end of finger 105, has been carried by suitable means (not represented) to a position such as to engage slidably ribbon 135 beneath it.

By lowering the mechanism 138, two ribbon loops 146 and 147 are formed, which pass through the opposite sides of the open slip-knot. In Fig. 20 these two sides are indicated at 148 and 149. At the same time, while fingers 103 and 104 return to their original position, fingers 101 and 102 are brought together gradually and continuously until they too return into their original position (Figs. 12 or 21). Ribbon 135 is now gripped by pliers 150, while it is stretched by lever 105 in the manner indicated in Figs. 21, and thus the knot around the base of the tuft is tightened. Thereafter the ribbon is blocked at 136, while the scissors 137 cut it, pliers 150 are opened

and finger 105 moves back and brings thereby roll 145 into the opening position. Arms 114 and 115 are again lowered, and under the action of springs 133 and 132 levers 119 and 118 are freed from loops 146 and 147 respectively.

By the above described procedure around the base 142 of the tuft of egg 7*e* a bow having two loops 146 and 147 is automatically formed, as shown in Fig. 22, in which, for the sake of greater clearness, the bow is shown still untightened. This bow can be loosened completely in the usual manner, that is by the simple pulling of its two free ends, while it cannot be untied by a pressure from the inside of the wrapping.

By simple modifications, the above described tying station can carry out knots having no loops, the ends of the ribbon being passed through the open slip-knot.

After the tying operation, the egg is dropped, in the position 7*e*, upon a conveyor belt 79 driven by rolls 80, and this belt discharges the egg, at its position 7*f* into a suitable tray (Fig. 1).

By the present wrapping machine there is obtained a chocolate egg covered by a smoothed tin foil wrapping and a cellophane sheet, the latter being closed by an ornamental ribbon tied with a bow knot, the whole packing of the egg being perfectly regular and uniform, with the additional advantage of being realized in a very speedy and automatic procedure.

It is understood that the arrangement of the various stations and their interconnection by transfer and timing means can be varied in many ways without departing from the scope of the present invention. For instance the plate 52 can be arranged horizontally, and equipped with mechanisms which transfer the eggs through it in a vertical direction, for instance vertically downward. Similarly the various stations and mechanisms could be correspondingly varied in their shape and size in the case of objects having different sizes and shapes.

WHAT WE CLAIM IS:—

1. A machine for the application of ornamental wrappings to shaped objects of circular cross-section comprising:

a first station to smooth a tin foil wrapping, already roughly applied to said object, said station consisting of means to rotate said object, a close-coiled helical spring rotatable on a support and yieldably biased by said support against the contour of said object;

a second station to apply a sheet of foil around said object so as to form the corners of said sheet into a tuft projecting over one end of said object, this second station consisting of a plate having an opening therein, means to position said object in front of said opening, means to yieldably retain said sheet between said plate and said opening, means to transfer said object through said opening and thus entrain also said sheet partly through the latter and leave parts of said sheet protruding through it, pusher means reciprocable towards the center of said opening to grip the protruding part of said sheet between themselves, arm means to lift and detach the corners of said sheet from said plate and form a tuft projecting beyond said object;

a third station to apply a knot at the base or neck of said tuft, this third station consisting in two fingers to grip a ribbon and form an open slip-knot thereon, means to position said tuft in said open slip-knot, two additional finger means, each twisting said ribbon around the neck of said tuft in oppositely wound loops, gripping means to drag two additional loops or ends through said open slip-knot, further means to tighten said slip-knot around the additional loops or ends and the neck of the tuft, cutting means to cut the ribbon from its supply;

transfer means to shift the object to be wrapped in succession through each station and position it correctly for its handling by the latter;

synchronising means to time the successive operative steps of the stations and the transfer means.

2. A machine according to claim 1, wherein the first station comprises:

two driven roll means of a concave profile matching the contour of the object which is already envelopped in a tin foil coarsely wrapped around it, each roll consisting of a central portion rigidly fixed to the drive shaft rotating it, and two end portions idling on said shaft;

and smoothing means yieldably urging said round shaped object against said roll means, said smoothing means consisting in a support curved to match the contour of said object, a close-coiled helical spring means surrounding said support rotatable around it, a second spring means inserted between said support and said helical spring and tensioned downward to urge the latter rotatably against the tin foil covering said object, the whole smoothing device being yieldably attached to means capable of displacing it towards and away from said object.

3. A machine according to claim 1, wherein the second station, to wrap a second sheet upon said object, comprises:

a plane support means, an opening within said support means, of a size permitting the passage of said object through it, means to position the object in front of said opening, means to interpose a sheet between said opening and said product, pad means yieldably pressing said sheet against said plate, wetting means surrounding the edges

of said opening, means to transfer said object entirely through said opening and to push thereby also part of said sheet therethrough, push-pin means movable towards the centre of said opening to grip between themselves the portion of sheet protruding through said opening, arm means to lift the corners of said sheet from said plate means, to form a tuft thereby which projects beyond one end of said round shaped product.

4. A machine according to claim 1, wherein the third station comprises:

spool and gripping means to feed a ribbon or string and hold the free end of it, finger means to form an open slip-knot with said ribbon, means to position the neck of said tuft over said open slip-knot, additional finger means to twist opposite lengths of said ribbon into oppositely wound loops around said neck, tiltable lever means on the first finger means to grip the ribbon, at opposite sides of said neck and drag it through opposite end points of said slip-knot, to form two loops, a further finger means to tighten said slip-knot around said neck and loops, to form thus a bow-knot around the neck of said tuft.

5. A machine according to claim 1, wherein the third station performing the operation of tieing a knot around the neck of a tuft consists of:

spool means to feed a length of ribbon, gripping means to hold the free end of said ribbon during the tieing operation, a sleeve means, a cylinder means reciprocable within said cylinder means and terminating in a rack means, two stirrups rigid with said sleeve, two gears fulcrumed on said stirrups, meshing with said racks and integral with two finger means, so that the upward and downward motion of said rack will open and close said finger means, lever means to grip the ribbon, tiltable on said finger means, two additional interlinked finger means to twist in two oppositely wound loops lengths of said ribbon around the neck of said tuft, gripping means on said first finger means to drag two loops of ribbon through a slip-knot formed by said first fingers with the ribbon, a fifth finger means to tighten the slip-knot around said tuft neck and loops.

6. A machine according to claim 1, wherein the transfer means positioning the object upon the first station and thence to the second station consists in a rod ending in two cribs, in lever means controlled by first cam means to impart to said rod a horizontal movement, and in second lever means controlled by a second cam to impart to said rod a vertical movement.

7. A machine according to claim 1, wherein the transfer means to shift the object through the plate of the second station consists in a push rod engaging one end of said object, and in a suction cap means, acting in cooperation with said push rod, engaging the opposite end of the object, together with the sheet applied to it, said suction cap being rigid with piston means pneumatically controlled within a cylinder.

8. A machine to apply ornamental wrappings to shaped objects of circular cross-section substantially as described herein with reference to the accompanying drawings.

ANDREWS & BYRNE,
Agents for the Applicants,
Chartered Patent Agents,
201, Bank Chambers,
329, High Holborn,
London, W.C.1.

Berwick-upon-Tweed: Printed for Her Majesty's Stationery Office by The Tweeddale Press Ltd.—1967
Published at the Patent Office, 25 Southampton Buildings, London, W.C.2 from which copies may be obtained.

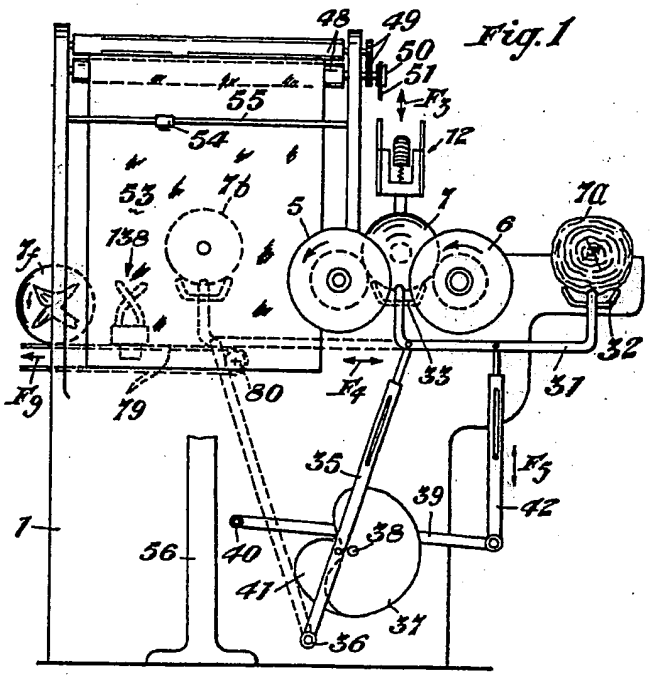
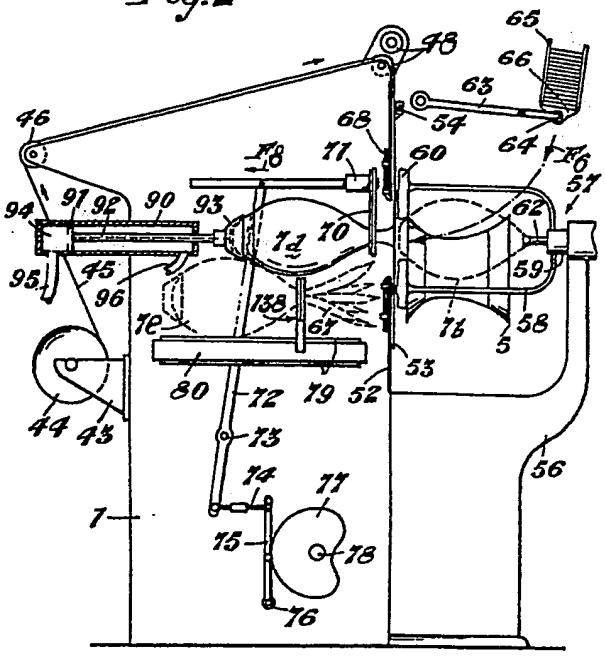

48
49
50
51
55
54
53
76
138
5
7
6
70
72
32
33
31
79
80
35
39
42
1
56
40
38
41
37
36

Fig. 1

Fig. 2


65
66
63
48
54
64
46
68
60
71
57
94
91
92
90
93
62
70
59
95
45
96
138
67
58
5
53
80
72
79
52
44
43
73
74
77
56
1
75
78
76

1,064,031 COMPLETE SPECIFICATION

6 SHEETS

This drawing is a reproduction of the Original on a reduced scale.

SHEETS 1 & 2

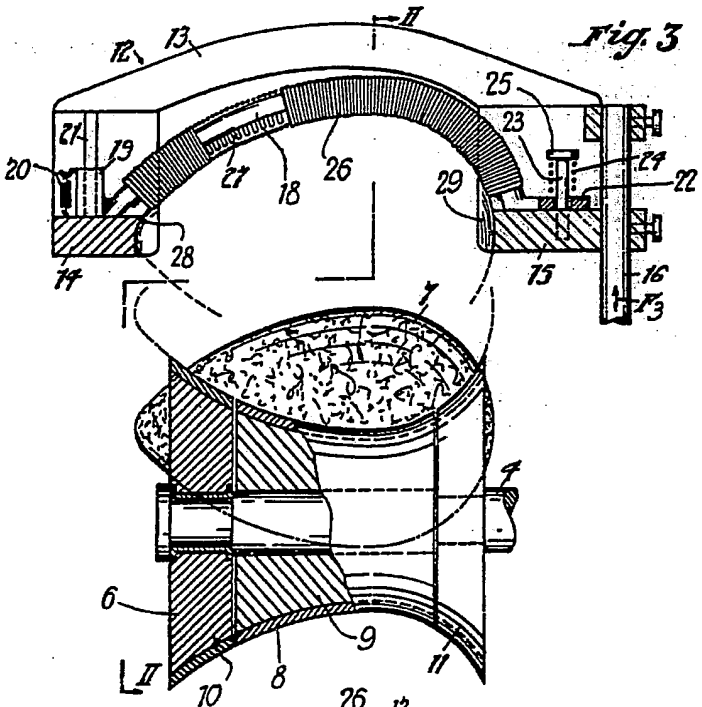


Fig. 3

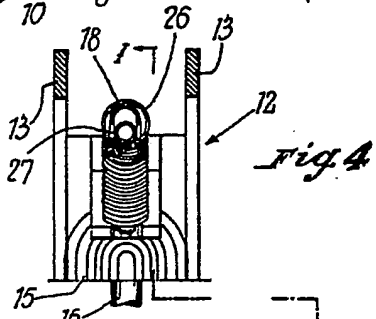
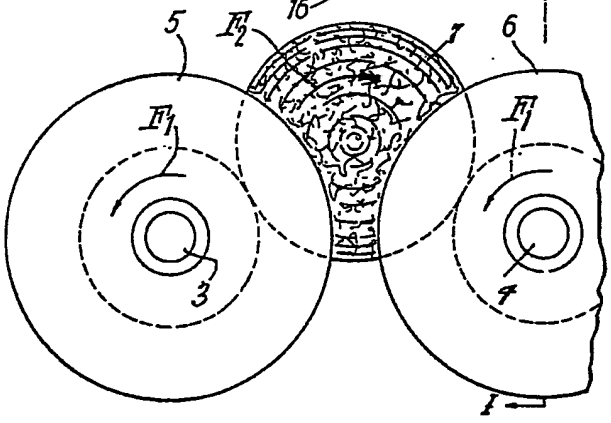


Fig. 4



1,064,031 COMPLETE SPECIFICATION
6 SHEETS
This drawing is a reproduction of the Original on a reduced scale.
SHEETS 1 & 2

Fig. 1

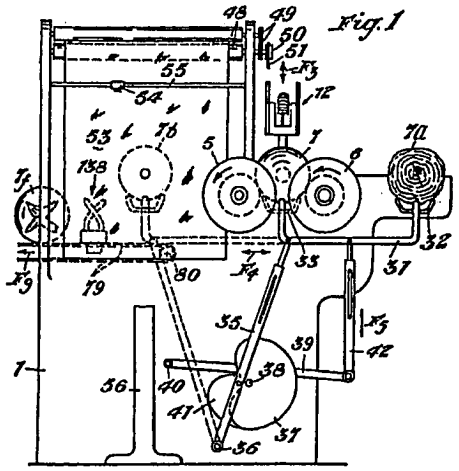


Fig. 2

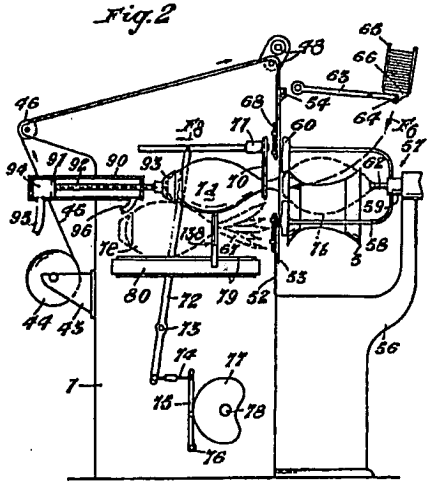


Fig. 3

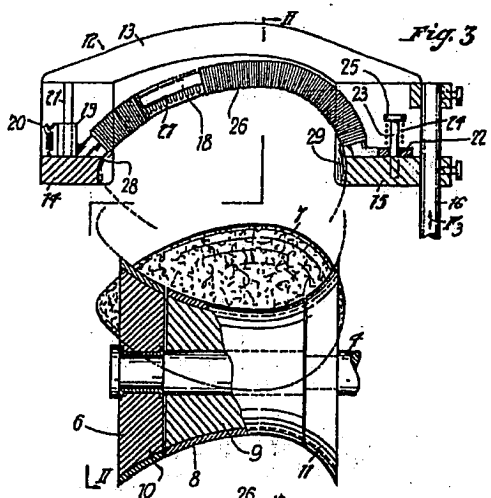


Fig. 4

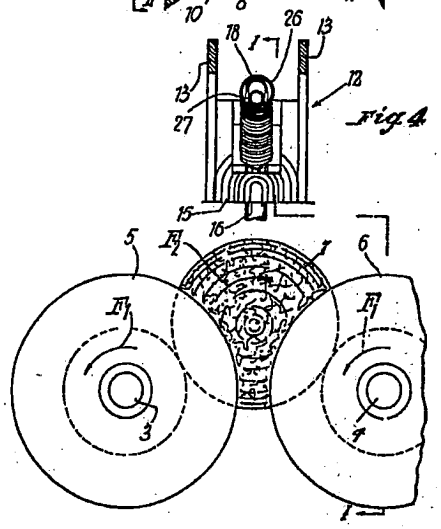


Fig.5

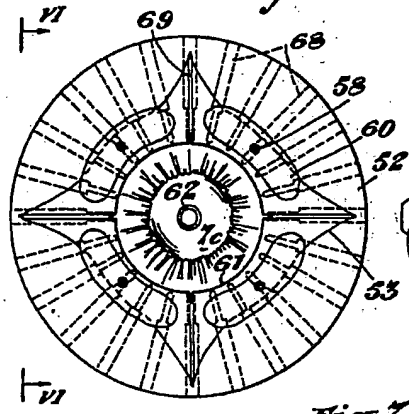


Fig.6

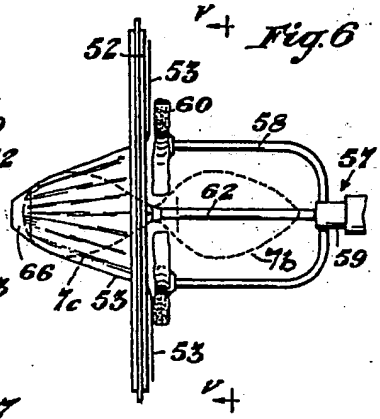


Fig.7

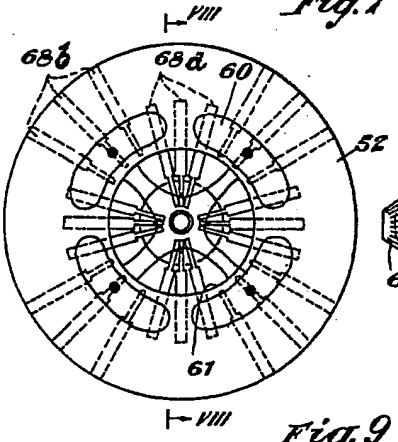


Fig.8

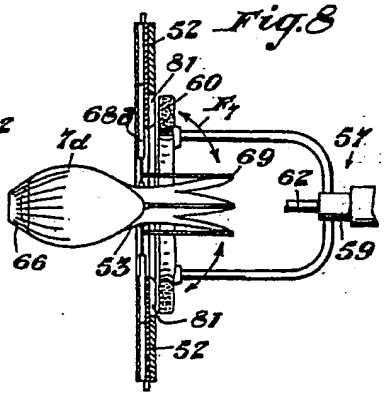


Fig.9

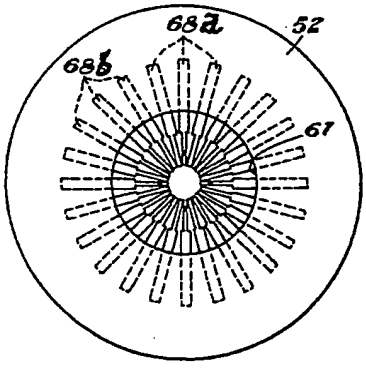
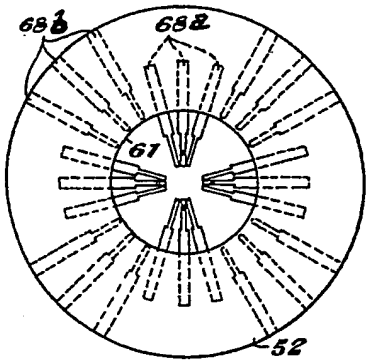


Fig.10



1,064,031 COMPLETE SPECIFICATION
6 SHEETS
This drawing is a reproduction of the Original on a reduced scale.
SHEETS 3 & 4

Fig.11

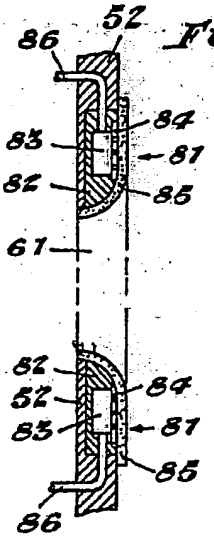
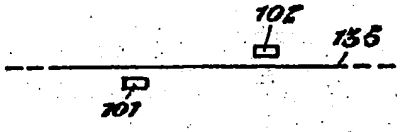


Fig.14



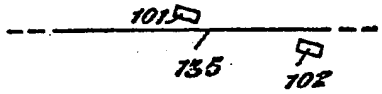
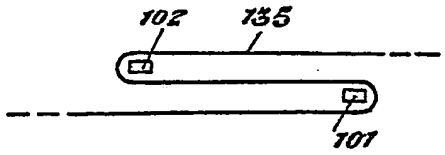


Fig.15

Fig.16

Fig.17



1,064,031 COMPLETE SPECIFICATION
6 SHEETS
This drawing is a reproduction of the Original on a reduced scale.
SHEETS 3 & 4

Fig.5

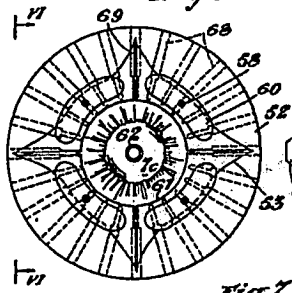


Fig.6

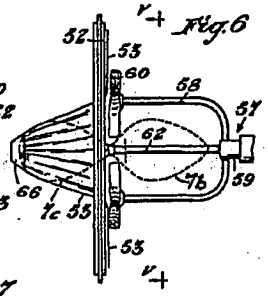


Fig.7

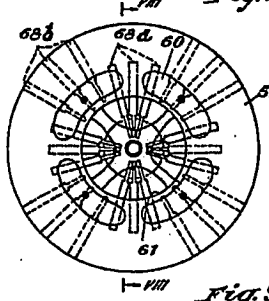


Fig.8

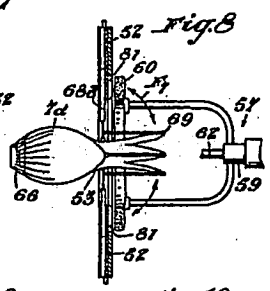


Fig.9

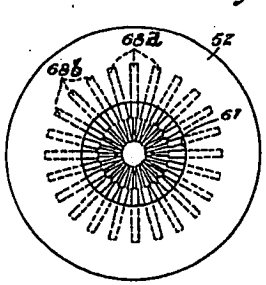


Fig.10

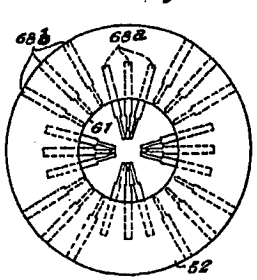


Fig.11

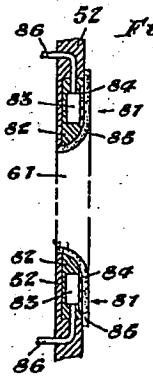
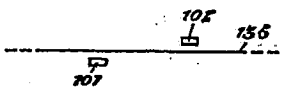


Fig.14



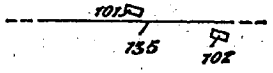


Fig.15

Fig.16

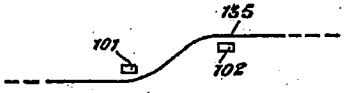


Fig.17

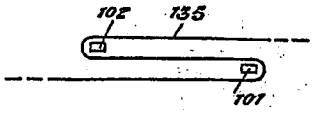


Fig. 12

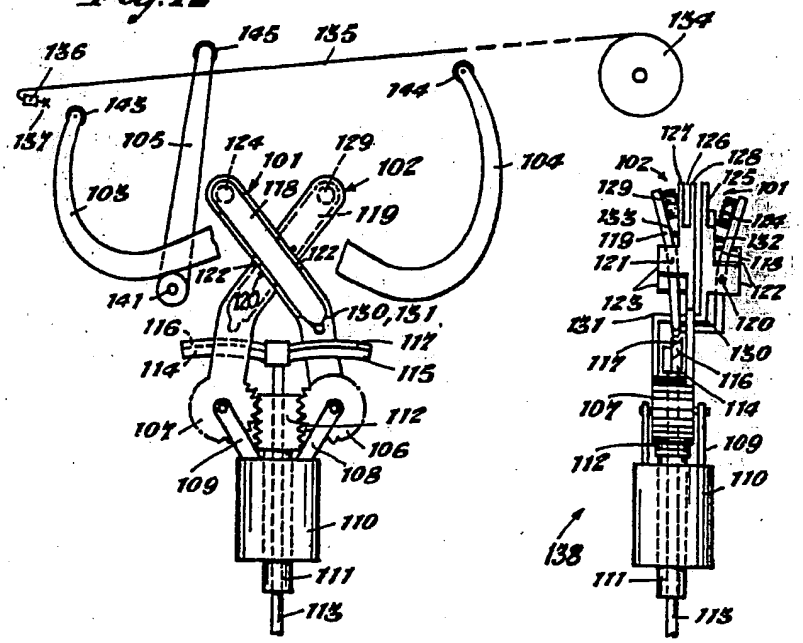


Fig. 13

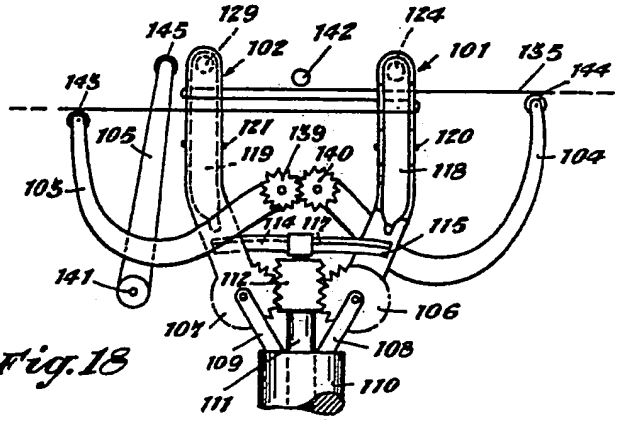


Fig. 18

1,064,031 COMPLETE SPECIFICATION
6 SHEETS This drawing is a reproduction of the Original on a reduced scale.
SHEETS 5 & 6

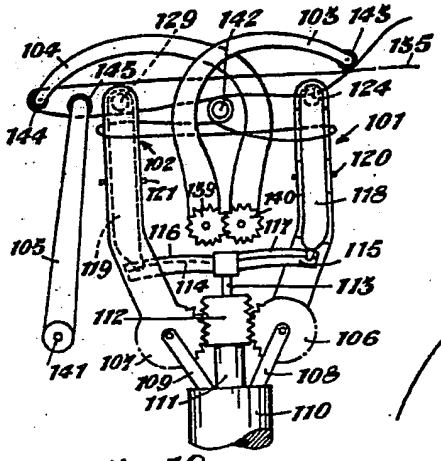


Fig.19

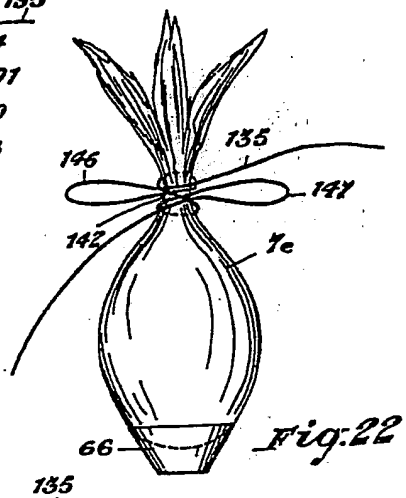


Fig.22

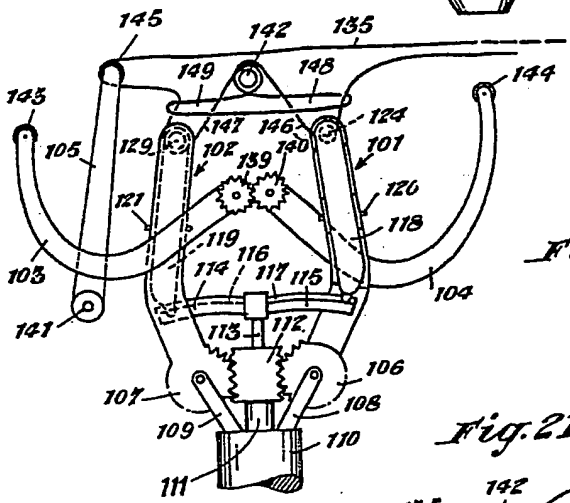
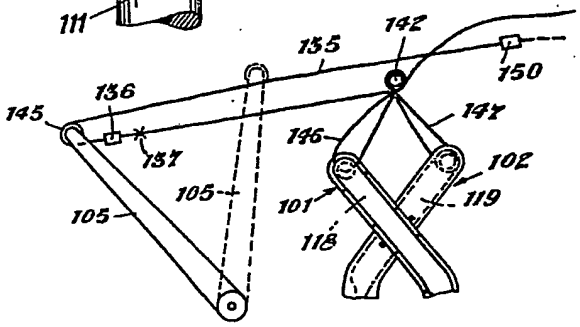


Fig.20

Fig.21



1,064,031 COMPLETE SPECIFICATION
6 SHEETS This drawing is a reproduction of the Original on a reduced scale.
SHEETS 5 & 6

Fig.12

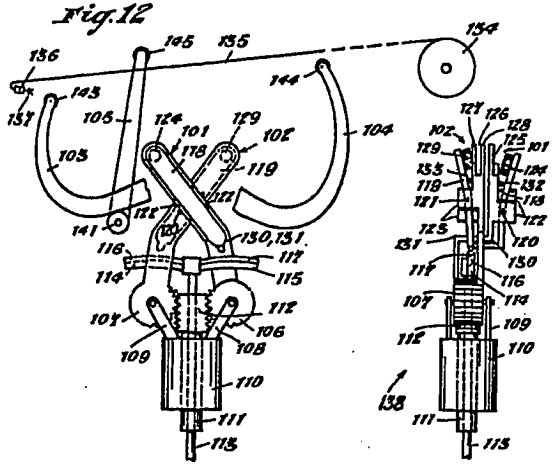


Fig.13

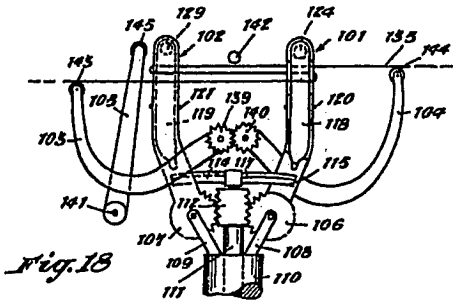


Fig.18

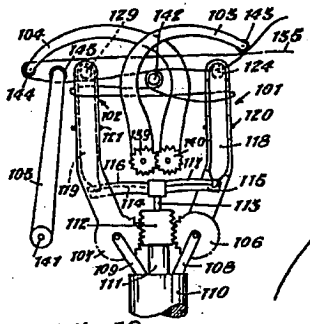


Fig.19

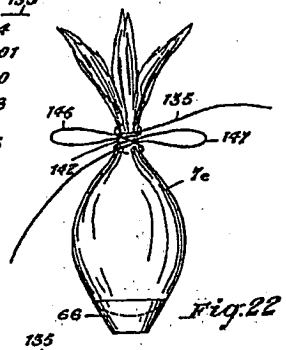


Fig.22

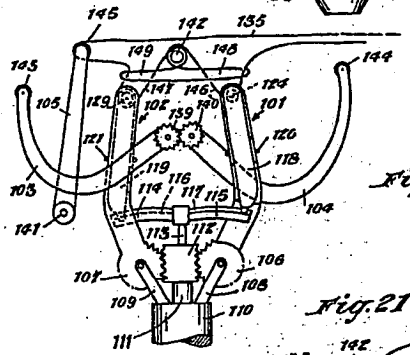
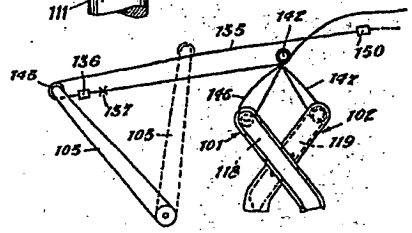


Fig.20

Fig.21



This Page is Inserted by IFW Indexing and Scanning Operations and is not part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☐ FADED TEXT OR DRAWING
- ☐ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☐ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: _____

IMAGES ARE BEST AVAILABLE COPY.
As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.